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## Depression and Anxiety Symptoms in Male Veterans and Non-Veterans: The Health and Retirement Study

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### Abstract

**Objectives**—We examined whether Veteran status was associated with elevated depression and anxiety symptoms in men aged 50 and older after adjusting for sociodemographic factors.

**Methods**—Participants were 6,577 men aged 50 years and older who completed the 2006 wave of the Health and Retirement Study (HRS). Forty-nine percent of participants were Veterans. A randomly selected subset of participants completed the HRS Psychosocial Questionnaire ( $N = 2,957$ ), which contained the anxiety items. Elevated depression and anxiety symptoms were determined based on brief versions of Center for Epidemiologic Studies – Depression Scale (CES-D total score  $\geq 4$ ) and Beck Anxiety Inventory (BAI total score  $\geq 12$ ).

**Results**—Elevated depression and anxiety symptoms were found in 11.0% and 9.9% of Veterans, respectively, compared with 12.8% and 12.3% of non-Veterans. Veteran status was not associated with increased odds of anxiety or depression symptoms in the multivariable-adjusted logistic regression analyses. Additional analyses indicated that Vietnam War Veterans were more than twice as likely as World War II or Korean War Veterans to have elevated depression symptoms (OR = 2.15, 95% CI: 1.54–3.00) or anxiety symptoms (OR = 2.12, 95% CI: 1.28–3.51).

**Conclusions**—In a community-based sample of men aged 50 and older, Veteran status was not associated with the presence of elevated depression and anxiety symptoms. Rather, these

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symptoms were associated with age, ethnicity, education, and medical conditions. Among Veterans, cohort effects accounted for differences in psychiatric symptoms. Including younger cohorts from the Global War on Terror may yield different results in future studies.

### Keywords

depression; anxiety; older adults; Veterans

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### Introduction

Psychiatric symptoms are common in the general population of older adults, with 14.6% reporting depression symptoms (Zivin *et al.*, 2010) and 19.0% reporting anxiety symptoms (Mehta *et al.*, 2003). Prevalence rates for depression and anxiety symptoms, however, may be even higher in the U.S. Veteran population. Veterans, particularly those who served in combat, generally experience more stress and trauma compared with non-Veterans, which may increase the likelihood of psychiatric symptoms in Veterans (e.g., Elder and Clipp, 1989; MacLean and Elder, 2007). Twenty-eight percent of Veterans Affairs (VA) outpatients 22 to 90 years of age screened positive for depression (Kazis *et al.*, 1998). Further, as many as 33.8% of Veterans ages 60 and older in a VA behavioral medicine clinic reported elevated depression symptoms (Goldberg *et al.*, 2003). Although post-traumatic stress disorder (PTSD) has been well documented in many Veteran cohorts, no published studies have documented elevated anxiety symptoms that are not specific to PTSD in older Veterans.

Documentation of the burden of depression and anxiety symptoms in U.S. Veterans is critical, given the large proportion of older adults who are Veterans and the demand to address the psychiatric needs of the growing older adult population. According to the 2010 National Survey of Veterans, 63.9% of Veterans are aged 55 years or older (Aponte *et al.*, 2010). Presently, there are 2.1 million living World War II (WWII) Veterans, 2.5 million Korean War Veterans, and 7.6 million Vietnam War Veterans (Department of Veterans Affairs, 2012). In the New England region of the U.S., the prevalence of depression symptoms was 16% in predominantly WWII Veterans (65–90 years old), 33% in Korean War Veterans (50–64 years old), and 51% in Vietnam Veterans (22 to 49 years old) (Kazis *et al.*, 1998). Approximately 17% of a nationally representative sample of Korean War Veterans reported that mental health symptoms limited their daily functioning (Brooks and Fulton, 2010). These studies suggest that depression, and possibly anxiety symptoms, are common among Veterans of all ages and potentially impact functioning.

In general, studies demonstrate a higher prevalence of psychiatric disorders and symptoms among older Veterans than in the general population of older adults (Jordan *et al.*, 1991; Kazis *et al.*, 1998). However, because these studies mostly were conducted with clinical samples of Veterans, these samples likely contain individuals with greater levels of psychiatric morbidity. Community-based studies are needed to quantify the burden of psychopathology within the US population of Veterans. To this end, we examined the prevalence of elevated symptoms of depression and anxiety by Veteran status in a sample aged 50 years and older recruited from a nationally representative study. We hypothesized

that elevated depression and anxiety symptoms would be more common among Veterans compared with non-Veterans. We investigated whether Veteran status was associated with elevated depression and anxiety symptoms after accounting for sociodemographic characteristics such as age, education, and ethnic minority status. We expected that individuals with younger age, fewer years of education (Himmelfarb and Murrell, 1984), and non-Latino whites (Breslau *et al.*, 2006) would be more likely to have elevated psychiatric symptoms.

## Methods

### Participants

We studied participants ( $N = 19,926$ ) from the 2006 wave of the Health and Retirement Study (HRS) conducted by the University of Michigan (NIA grant U01AG009740). The 2006 wave was selected because this was the first time that Beck Anxiety Inventory (Beck and Steer, 1990) items were included in HRS surveys. Every two years HRS surveys a nationally representative sample of adults aged 50 years and older on topics related to overall health conditions, family structure, and economic status. Whenever possible, participants are interviewed in their homes; otherwise, surveys are conducted by phone. Participants provided either verbal or written informed consent; the study was approved by the University of Michigan Institutional Review Board. A complete description of the HRS longitudinal panel survey design and methods is available elsewhere (Juster and Suzman, 1995).

We studied male Veterans aged 50 years and older in the 2006 wave of the HRS with data on depression or anxiety symptoms. Women were excluded because few (2.5%) aged 50 and older were Veterans ( $n = 100$ ). Of the age-eligible male participants ( $N = 7,214$ ), 591 were excluded because their interview was completed by a proxy ( $n = 511$  proxy was spouse/partner,  $n = 80$  proxy was not spouse or partner). Ten had missing Veteran status information and were excluded, resulting in an  $N$  of 6,613 potential participants. To be included in our analyses, participants must have completed every CES-D or BAI item. Of these, 6,558 completed all the depression items. Of the 6,613 participants meeting our aforementioned inclusion/exclusion criteria, 2,957 participants were randomly selected to complete the HRS Psychosocial Questionnaire that included anxiety symptoms (see below). Of those, 2,858 completed all the anxiety items in the HRS Psychosocial Questionnaire. The combined final sample for participants completing either the depression items, anxiety items, or both consisted of 6,577 men age 50 and older.

### Measures

**Elevated Depression and Anxiety Symptoms**—As part of the 2006 interview, participants completed a screen for depression symptoms using eight yes/no items from the Center for Epidemiologic Studies – Depression Scale (CES-D; Radloff, 1977). The original 20-item CES-D has been validated for use with older adults (Beekman *et al.*, 1997) and the abbreviated version used by HRS was originally developed for use in the Established Populations for Epidemiologic Study of the Elderly (Steffick, 2000). The eight-item CES-D has been evaluated within HRS and has good internal consistency:  $\alpha = 0.81$  to  $0.83$

(Steffick, 2000). In the present study, the internal consistency was 0.77. A cut-score of 4 symptoms was used to classify depression symptoms as elevated. The cut-score was determined by HRS investigators to be similar to the cut-score of 16 on the full CES-D (Steffick, 2000) and has been used in prior research with older adults (e.g., Zivin *et al.*, 2010).

A randomly selected subsample of all HRS participants was invited to complete the HRS Psychosocial Questionnaire, which contained items related to anxiety. The response rate for the HRS Psychosocial Questionnaire was 82% (Clarke *et al.*, 2008). Anxiety was assessed using five items from the Beck Anxiety Inventory (BAI): “fear of the worst happening,” “nervous,” “hands trembling,” “fear of dying,” and “felt faint”. Respondents rated the frequency of these symptoms from “never” = 1 to “most of the time” = 4. The BAI has been shown to be a valid measure of anxiety for use with older adults (Wetherell and Areán, 1997). Internal consistency of the brief BAI was good ( $\alpha = 0.81$ ; Clarke *et al.*, 2008). We summed responses for a total score of anxiety symptom frequency ranging from 5 to 20. We classified participants in the highest decile of brief BAI total scores (i.e., scores  $\geq 12$ ) as having elevated anxiety. We chose this cut-point because it approximates the prevalence of any anxiety disorder identified in the National Comorbidity Study Replication (7.0% in those aged 65 and older; Gum *et al.*, 2009).

**Other Measures**—The HRS collected demographic variables, including age, years of education, and ethnicity. HRS also gathered information regarding Veteran status and the year military service started and ended during the participants’ initial study interview, which occurred between 1992 and 2006. We calculated era of service based on years of service reported and the Department of Veterans Affairs (2012) benefits eligibility criteria for WWII (1941–1945), Korean War (1950–1953), Vietnam War (1964–1975), Desert Shield/Desert Storm (1990–1991), Global War on Terror (2001-present), multiple war eras, or no war era. Participants were asked to indicate (yes/no) whether they had each of the following medical conditions as part of a self-report medical history assessment survey conducted in every survey wave: arthritis, cancer, diabetes, heart condition, hypertension, lung disease, and stroke. Participants missing information on the above variables were excluded from analyses that included these measures.

## Analysis

All analyses were conducted with IBM SPSS Statistics 21.0 (Chicago, IL) using HRS sampling weights to adjust for the complex clustered and stratified sample design (Ofstedal *et al.*, 2011). The HRS 2006 wave sampling weight was applied to demographic analyses and analyses on depression symptoms. The HRS Psychosocial Questionnaire sampling weight (Ofstedal *et al.*, 2011) was used for the anxiety symptoms analyses and examination of percentages of both anxiety and depression symptoms.

We calculated frequencies ( $n$ ), percentages (%), and standard errors (SE) for categorical sociodemographic variables (age categories, education categories, ethnicity) and medical conditions, and means and standard errors (mean  $\pm$  SE) for continuous variables (CES-D, BAI). We compared Veterans and non-Veterans using Chi-square tests for categorical

variables and Student's t-test analyses for continuous variables. We calculated weighted percentages of elevated depression and anxiety symptoms by age and Veteran status. We fit unadjusted and multivariable-adjusted logistic regression models with Veteran status as the primary predictor and elevated depression symptoms (yes/no) and anxiety symptoms (yes/no) as outcome variables. Adjusted models included age, years of education, ethnicity, and medical conditions as potential confounders. In follow-up analyses, we fit unadjusted and multivariate adjusted logistic regression models to compare Vietnam era Veterans with World War II/Korean War era Veterans.

## Results

### Demographics

Participants aged 50 to 64 years represented 58.0% of the total sample (Table 1). A large majority of participants (82.2%) had at least 12 years of education and were non-Latino white (83.7%). Veterans represented 49.0% of the total sample ( $n = 3,494$ ). Approximately 18.1% ( $n = 850$ ) of Veterans did not serve during wartime. Almost 81.4% ( $n = 2,626$ ) served during a war era including 1.9% ( $n = 84$ ) who served during multiple eras. Of those who served during one war era, 16.5% ( $n = 774$ ) served during WWII, 14.4% ( $n = 670$ ) during the Korean War, 48.3% ( $n = 1,089$ ) during the Vietnam War, 0.2% ( $n = 6$ ) during Desert Shield/Desert Storm, and 0.1% ( $n = 3$ ) during the Global War on Terror. Era of service was unknown for 0.5% ( $n = 18$ ). Veterans were significantly older, more likely to have at least a high school education ( $> 12$  years), and less likely to belong to a racial or ethnic minority group compared with non-Veterans ( $ps < 0.001$ ). Compared with non-Veterans, Veterans had significantly lower total scores on the CES-D (1.19 vs. 1.33,  $Wald F(1, 6557) = 6.05, p = 0.01$ ), and the BAI (7.48 vs. 7.79,  $Wald F(1, 2857) = 6.36, p = 0.01$ ). However, the mean total scores for both Veterans and non-Veterans were below our identified cut-points CES-D ( $< 4$ ) and BAI ( $< 12$ ). There were no significant differences in CES-D and BAI total scores among Veterans who served during WWII, Korean War, or Vietnam War ( $p > 0.05$ ).

We examined demographic differences between participants who did and did not complete the depression and anxiety measures. Participants missing items ( $n = 55$ ) on the CES-D were older ( $\chi^2(1.85, 12,244.88) = 11.07, p = 0.01, 35.6\%$  vs.  $18.1\%$  were 75 years or older) compared with participants with a complete CES-D ( $n = 6,558$ ). No significant differences in years of education, ethnicity, or Veteran status were found for participants with missing items compared with those with complete CES-D items. Participants with missing BAI items ( $n = 99$ ) were more likely to be older ( $\chi^2(1.89, 5576.13) = 12.47, p = .003, 32.5\%$  vs.  $17.8\%$  were 75 years or older) and to have less than 12 years of education ( $\chi^2(2.97, 8777.73) = 20.15, p = 0.001, 33.9\%$  vs.  $16.8\%$ ), and were more likely to be Latino ( $\chi^2(2.92, 8621.26) = 24.04, p < 0.001, 11.3\%$  vs.  $5.4\%$ ) or African American ( $19.3\%$  vs.  $7.5\%$ ) compared with participants with complete BAI measures ( $n = 2,858$ ).

### Rates of Elevated Depression and Anxiety Symptoms

There were no significant differences in the percentage of Veterans and non-Veterans with elevated depression or anxiety symptoms. Eleven percent  $\pm 0.7$  of Veterans compared with  $12.8\% \pm 0.7$  non-Veterans had elevated depression symptoms,  $X^2(6576) = 5.37, p = 0.07$ .

Approximately ten percent ( $9.9\% \pm 0.9$ ) of Veterans compared with  $12.3\% \pm 1.1$  of non-Veterans had elevated anxiety symptoms,  $X^2(2955) = 4.13$ ,  $p = 0.09$ ). Further,  $3.5\% \pm 0.6$  of Veterans compared with  $4.7\% \pm 0.7$  of non-Veterans had both elevated depression and anxiety symptoms,  $X^2(2955) = 2.53$ ,  $p = 0.25$ . Weighted percentages and SEs of elevated symptoms by age and Veteran status are presented in Table 2.

### **Elevated Depression and Anxiety Symptoms in Veterans and Non-Veterans**

In multivariable-adjusted logistic regression models, sociodemographic factors and medical conditions, but not Veteran status, emerged as significant predictors of elevated symptoms. Although Veterans had a lower odds of elevated depression symptoms in the unadjusted (OR = 0.84, 95% CI: 0.69–1.01) and adjusted models (OR = 0.93, 95% CI: 0.75–1.15), these differences were not significant (Table 3). Age, education, ethnicity, and the presence of six of seven medical conditions (i.e., all but hypertension) were associated with elevated depression symptoms. Compared with men aged 50 to 64 years, men aged 65 to 74 years and men aged 75 years had almost half the odds of elevated depression symptoms. Men with 12 or more years of education were less likely to have elevated depression symptoms compared with participants with < 12 years of education. Additionally Latinos had an increased likelihood of having elevated depression symptoms.

In the multivariable adjusted model, Veteran status was associated with a lower odds of having elevated anxiety symptoms in unadjusted (OR = 0.78, 95% CI: 0.59–1.04) and adjusted analyses (OR = 0.80, 95% CI: 0.58–1.09), but results were again not significant. Age, education, race/ethnicity and three medical conditions (i.e., arthritis, heart condition, lung disease) were associated with elevated anxiety symptoms. Specifically, men aged 65 to 74 years old were less likely to have elevated anxiety symptoms compared with younger men aged 50 to 64 years. Men with 16 years of education were less likely to have elevated anxiety symptoms compared with males with < 12 years of education. Both African Americans and Latinos were more likely to have elevated anxiety symptoms compared with non-Latino whites.

### **Elevated Depression and Anxiety Symptoms in Veteran Cohorts**

To follow up on the age differences, we examined whether older wartime Veterans (WWII and Korean era) or younger wartime Veterans (Vietnam era) had elevated depression and anxiety symptoms in unadjusted and multivariable-adjusted logistic regression models (Table 4). We combined categories of ethnicity to examine whites and non-whites due to low cell sizes for ethnic minorities in the anxiety models. In the adjusted models, Vietnam era Veterans were more than twice as likely as WWII or Korean era Veterans to have elevated depression (OR = 2.15, 95% CI: 1.54–3.00) and anxiety symptoms (OR = 2.12, 95% CI: 1.28–3.51). However, in two post hoc multivariable-adjusted logistic regression analyses with age entered as a covariate, era of service no longer emerged as a significant predictor of elevated depression or anxiety.



## Discussion

This is the first study to investigate whether Veterans and non-Veterans differed in the presence of elevated depression and anxiety symptoms in a nationally representative sample of men aged 50 and older. Contrary to expectation, no significant differences in rates of elevated depression and anxiety symptoms were found for Veterans versus non-Veterans when all Veterans were considered together. When analyzed by era of service, however, Vietnam Veterans were twice as likely to have elevated depression and anxiety symptoms compared with WWII/Korean era Veterans. The finding of elevated depression and anxiety symptoms among younger participants is consistent with cross-sectional psychiatric epidemiology studies (e.g., Gum *et al.*, 2009). Lower education (< 12 years) is a recognized risk factor for depression in several studies (for a review see Vink *et al.* 2008), which is consistent with our findings. Latinos were more likely to have elevated depression or anxiety symptoms and African Americans were more likely to have elevated anxiety symptoms, in contrast with our expectations. Although most studies do not find ethnic group differences in risk of anxiety or depressive symptoms (see Vink *et al.*, 2008), one study found that non-whites were more likely than whites to have elevated depression symptoms (Siegel *et al.*, 2004). Our findings add to the literature on demographic characteristics associated with increased relative risk of depression and anxiety symptoms.

In previous studies, Veterans reported nearly twice the rate of depression symptoms as individuals in the general population (Goldberg *et al.*, 2003; Kazis *et al.*, 1998); however, Veterans in our study were from the general community whereas those in prior studies were recruited from the VA Health Care System (VAHCS). Veterans with more severe disabilities, lower incomes and those without private insurance may be more likely to use the VAHCS (Shen *et al.*, 2008). Older Veterans using the VAHCS have more hospitalizations and higher rates of decline in health and function compared to older adults using a Medicare health maintenance organization (Studenski *et al.*, 2003). Nevertheless, Veterans seeking healthcare in the community may simultaneously utilize the VAHCS to obtain medications or specialized medical visits. Further research comparing mental health symptoms of VA users and nonusers will help tailor assessment and treatment to the needs of these subpopulations.

Important cohort differences in the relative risk of depression and anxiety symptoms emerged in Veteran samples such that Vietnam Veterans were twice as likely to have elevated depression and anxiety symptoms. Assessing and treating psychiatric symptoms in this large cohort of Veterans will likely help older Veterans maintain their current level of functioning. Additionally, this finding is consistent with previous findings of elevated psychiatric problems in Vietnam Veterans compared with WWII or Korean Veterans (Fontana and Rosenheck, 1994) and more difficulty functioning for Vietnam Veterans compared with WWII, Korean, or Persian Gulf War Veterans (Villa *et al.*, 2002). Our findings extend previously identified patterns of cohort differences in anxiety (Gum *et al.*, 2009), an understudied problem in older Veterans in particular. Continuing to study anxiety in conjunction with depression is essential in light of the high comorbidity between the two disorders. The etiology of elevated depression and anxiety symptoms among Vietnam Veterans may be reflective of age or cohort differences resulting from different military

experiences. Social support also plays a mediating role in the effects of military experiences on expressed symptoms (e.g., Fontana *et al.*, 1997), which could account for Veteran cohort differences in that Vietnam Veterans had less homecoming support compared with other Veteran cohorts. The aging of Vietnam Veterans suggests that more late-life psychiatric services may be needed to improve functioning in conjunction with providing efficacious psychiatric treatment.

Limitations to the current study include the cross-sectional study design, absence of sufficient data on Veteran combat status, and age as a confound of cohort. Further, this study focused on male Veterans due to the few female Veterans included in the HRS, thus limiting the generalizability of our study to female Veterans. As of 2010, female Veterans represent 8.1% of the total Veteran population and are projected to represent approximately 15% of all Veterans by 2036 (Department of Veterans Affairs Office of the Actuary, 2010). The increased risk of depression and anxiety disorders in females versus male adults (Byers *et al.*, 2010) and recent data demonstrating that female Veterans between the ages of 30 and 71 are more likely to receive a diagnosis of psychiatric disorders such as depression (Maguen *et al.*, 2010) suggest that even higher rates of elevated depression and anxiety symptoms might be found for older female Veterans relative to their male counterparts. The final limitation is related to missing data. An examination of missing data demonstrated that the oldest age group was less likely to complete the CES-D and BAI items. Latinos, African Americans, and participants with less than 12 years of education were also less likely to complete the BAI items. It is possible that the non-response among these groups led to lower percentages of individuals with elevated depression or anxiety symptoms. We also excluded participants who completed interviews by proxy because self-report data and corroborative reports yield different information (e.g., Davison *et al.*, 2009). Excluding individuals who completed interviews by proxy may result in a healthier sample and an underestimated prevalence of elevated depression and anxiety symptoms.

In summary, the present study suggests that, in the community, the prevalence of elevated depression and anxiety symptoms is comparable between Veterans and non-Veterans. In addition, our findings enhance understanding of how the prevalence of elevated depression and anxiety symptoms varies among Veteran cohorts. Future studies comparing older Veterans in the larger community with Veterans who are consumers of the VAHCS would serve to clarify findings from the present study, which differ from findings with Veterans in the VAHCS. Future research with younger Veteran cohorts in addition to Vietnam, Korean, and WWII era Veterans will likely help us identify risk and resiliency factors in older male Veterans.

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### Key Points

- The percentage of men aged 50 years and older with elevated depression symptoms or anxiety symptoms did not differ between Veterans and non-Veterans.
- Men who were younger, Latino, or had < 12 years education had a greater odds of elevated depression and anxiety symptoms. African American men had a greater odds of elevated anxiety symptoms.
- Among Veterans, Vietnam War era Veterans had a greater odds of elevated depression or anxiety symptoms compared with World War II and Korean War Veterans.

**Table 1**

Demographic and Psychiatric Characteristics of Participants

	Total (N = 6,577)		Veterans (n = 3,494)		Non Veterans (n = 3,083)		Test Statistic
	n	% (SE)	n	% (SE)	n	% (SE)	
Age							$\chi^2_{(1,89)} = 465.3^{***}$
50–64	2315	58.0 (0.7)	893	45.8 (1.1)	1422	69.8 (0.8)	
65–74	2517	23.8 (0.5)	1353	27.2 (0.8)	1164	20.4 (0.7)	
75	1745	18.2 (0.5)	1248	27.0 (0.8)	497	9.7 (0.5)	
Education (years)							$\chi^2_{(2,96)} = 161.4^{***}$
< 12 less than HS	1510	17.8 (0.5)	592	13.7 (0.6)	918	21.8 (0.8)	
12/high school	1930	28.2 (0.7)	1113	31.9 (1.0)	817	24.6 (0.9)	
13–15 some college	1328	22.3 (0.6)	837	26.2 (0.9)	491	18.5 (0.9)	
16	1809	31.7 (0.7)	952	28.1 (0.9)	952	35.1 (1.1)	
Race/Ethnicity							$\chi^2_{(2,89)} = 178.1^{***}$
White, Non-Latino	5155	83.7 (0.5)	3015	89.6 (0.6)	2140	78.1 (0.8)	
African American	778	8.1 (0.4)	314	6.3 (0.4)	464	9.8 (0.6)	
Latino	469	5.3 (0.3)	115	2.6 (0.3)	354	7.9 (0.5)	
Other	174	2.8 (0.3)	50	1.4 (0.2)	124	4.2 (0.4)	
Medical Conditions							
Arthritis	3514	48.0 (0.8)	1998	53.3 (1.0)	1516	42.9 (1.1)	$\chi^2_{(1)} = 71.3^{***}$
Cancer	1034	12.8 (0.5)	663	16.3 (0.7)	371	9.4 (0.6)	$\chi^2_{(1)} = 68.8^{***}$
Diabetes	1446	19.3 (0.6)	781	20.2 (0.8)	665	18.5 (0.8)	$\chi^2_{(1)} = 3.3$
Heart Condition	1977	25.5 (0.6)	1221	31.0 (0.9)	756	20.2 (0.8)	$\chi^2_{(1)} = 99.7^{***}$
Hypertension	3711	51.9 (0.8)	2052	55.3 (1.0)	1659	48.7 (1.1)	$\chi^2_{(1)} = 28.4^{***}$
Lung Disease	643	8.7 (0.4)	416	10.6 (0.6)	227	6.8 (0.5)	$\chi^2_{(1)} = 29.4^{***}$
Stroke	473	5.8 (0.3)	276	6.7 (0.5)	197	4.9 (0.4)	$\chi^2_{(1)} = 9.1^{**}$
CES-D (M (SE))	1.26	(0.03)	1.91	(0.04)	1.33	(0.04)	$F(1, 6557) = 6.05^*$
BAI (M (SE))	7.63	(0.06)	7.48	(0.08)	7.79	(0.09)	$F(1, 2,857) = 6.4^*$

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Notes: N's (unweighted) vary from 6,577 to 6,535 for all variables except 5-item BAI included in HRS Psychosocial Questionnaire (N = 2,858). We use HRS weights to report weighted frequencies, percentages, means, and SE's. Latino group includes white and African American Latinos. CES-D = Center for Epidemiologic Studies Depression Scale. HS = high school, BAI = Beck Anxiety Inventory, 5-item.

\*\*\* p < 0.001,  
\*\* p < 0.01,  
\* p < 0.05

**Table 2**  
 Weighted Percentages (SE) of Elevated Depression and Anxiety Symptoms by Veteran Status and Age Group

	Veterans					Non-Veterans				
	50-64	65-74	75+	50-64	65-74	75+	50-64	65-74	75+	
Elevated Depression	13.5 (1.3)	7.7 (0.8)	10.0 (0.9)	13.5 (1.0)	9.8 (0.9)	14.2 (0.7)				
Elevated Anxiety <sup>a</sup>	10.8 (1.7)	8.7 (1.3)	9.5 (1.4)	11.3 (1.4)	12.4 (1.7)	19.6 (3.4)				
Both <sup>a</sup>	4.3 (1.1)	2.9 (0.9)	2.7 (0.9)	4.5 (0.9)	3.5 (1.0)	8.5 (2.5)				

Notes: HRS2006 weights are used to estimate percentage of elevated depression symptoms.

<sup>a</sup>HRS Psychosocial Questionnaire weights are used to estimate percentage of elevated anxiety and both elevated depression and anxiety symptoms.



**Table 3**

Association Between Demographic Characteristics and Elevated Symptoms of Depression and Anxiety

	Elevated Depression Symptoms	Elevated Anxiety Symptoms
	OR (95% CI)	OR (95% CI)
<i>Unadjusted Models</i>		
Veteran Status		
Non-Veteran	(Ref)	(Ref)
Veteran	0.84 (0.69, 1.01)	0.78 (0.59, 1.04)
<i>Adjusted Models</i>		
Veteran Status		
Non-Veteran	(Ref)	(Ref)
Veteran	0.93 (0.75, 1.15)	0.80 (0.58, 1.09)
Age		
50 – 64	(Ref)	(Ref)
65 – 74	<b>0.44 (0.35, 0.55)</b>	<b>0.68 (0.48, 0.95)</b>
75 +	<b>0.52 (0.40, 0.67)</b>	0.72 (0.50, 1.05)
Education (years)		
< 12/less than HS	(Ref)	(Ref)
12/HS	<b>0.69 (0.53, 0.88)</b>	0.71 (0.49, 1.03)
13–15/some college	<b>0.52 (0.39, 0.70)</b>	0.66 (0.43, 1.01)
16/college	<b>0.36 (0.27, 0.49)</b>	<b>0.35 (0.22, 0.56)</b>
Race/Ethnicity group		
White, Non-Latino	(Ref)	(Ref)
African American	1.30 (0.97, 1.76)	<b>1.81 (1.18, 2.77)</b>
Latino	<b>1.80 (1.29, 2.53)</b>	<b>2.69 (1.64, 4.41)</b>
Other	0.98 (0.55, 1.76)	1.09 (0.46, 2.56)
Medical Conditions (Ref = no)		
Arthritis	<b>1.48 (1.20, 1.83)</b>	<b>1.79 (1.30, 2.47)</b>
Cancer	1.14 (0.87, 1.50)	1.11 (0.78, 1.58)
Diabetes	<b>1.55 (1.24, 1.94)</b>	1.27 (0.90, 1.79)
Heart Condition	<b>1.43 (1.14, 1.80)</b>	<b>1.47 (1.07, 2.02)</b>
Hypertension	1.13 (0.92, 1.40)	1.01 (0.74, 1.38)
Lung Disease	<b>1.68 (1.25, 2.26)</b>	<b>2.10 (1.41, 3.14)</b>
Stroke	<b>1.47 (1.05, 2.04)</b>	1.39 (0.87, 2.25)

Note: Bolded ORs indicate that 95% CI does not include zero.

**Table 4**

Association Between Era of Service and Elevated Symptoms of Depression and Anxiety for Older Veterans

	Elevated Depression Symptoms	Elevated Anxiety Symptoms
	OR (95% CI)	OR (95% CI)
<i>Unadjusted Models</i>		
Era of Service		
WWII/Korea	(Ref)	(Ref)
Vietnam	<b>1.41 (1.06, 1.87)</b>	1.18 (0.76, 1.83)
<i>Adjusted Models</i>		
Era of Service		
WWII/Korea	(Ref)	(Ref)
Vietnam	<b>2.15 (1.54, 3.00)</b>	<b>2.12 (1.28, 3.51)</b>
Race/Ethnicity		
White	(Ref)	(Ref) <sup>a</sup>
African American	1.15 (0.70, 1.91)	1.72 (0.93, 3.20) <sup>a</sup>
Latino	<b>2.57 (1.30, 5.08)</b>	
Other	1.05 (0.33, 3.35)	
Education (years)		
< 12/less than HS	(Ref)	(Ref)
12/HS	0.72 (0.50, 1.13)	0.71 (0.37, 1.33)
13–15/some college	<b>0.55 (0.34, 0.87)</b>	0.66 (0.33, 1.33)
16/college	<b>0.54 (0.34, 0.86)</b>	<b>0.26 (0.10, 0.65)</b>
Medical Conditions (Ref = no)		
Arthritis	<b>1.66 (1.16, 2.37)</b>	<b>3.73 (2.03, 6.86)</b>
Cancer	1.20 (0.82, 1.78)	1.54 (0.92, 2.58)
Diabetes	1.31 (0.91, 1.88)	1.21 (0.71, 2.07)
Heart Condition	<b>1.62 (1.13, 2.34)</b>	1.31 (0.81, 2.11)
Hypertension	1.17 (0.84, 1.66)	1.15 (0.70, 1.90)
Lung Disease	1.52 (0.98, 2.36)	<b>2.13 (1.17, 3.85)</b>
Stroke	1.33 (0.78, 2.24)	1.08 (0.51, 2.26)

*Note:*<sup>a</sup>For the anxiety analysis, ethnicity was grouped as white and Non-white.